

IN THE CLAIMS:

1. (currently amended): An apparatus for monitoring position, the apparatus comprising:

a cylinder having walls defining an interior and further having a length defined between a first end and a second end  
wherein the first end is opposite to the second end of the cylinder;

a first wall at the first end of the cylinder;

a shaft having a length defined between a first end and a second end wherein a portion of the shaft is within the interior of the cylinder and wherein the shaft moves within the interior of the cylinder;

a second wall at the second end of the cylinder ~~head connected to the shaft~~;

an aperture within the first wall at the first end wherein light projects through the aperture into the cylinder; and

a sensor within the second wall of the cylinder wherein the sensor detects intensity of light within the interior of the cylinder which is not absorbed by the shaft and the interior of the cylinder wherein the intensity of light detected by the sensor corresponds to a position of the shaft in the interior of the cylinder.

2. (currently amended): The apparatus of Claim 1 ~~further~~ comprising:

~~a second wall at the second end of the cylinder~~ wherein the second wall encloses the cylinder.

3. (original): The apparatus of Claim 1 further comprising:

    a second shaft within the cylinder.

4. (original): The apparatus of Claim 1 further comprising:

    a fluid within the cylinder.

5. (original): The apparatus of Claim 1 wherein the sensor is adjacent to the second end of the cylinder.

6. (original): The apparatus of Claim 1 wherein the aperture is at a center of the wall.

7. (original): The apparatus of Claim 1 further comprising:

    a light source adjacent to the first end of the wall wherein the light source projects the light through the aperture.

8. (canceled)

9. (currently amended): A system for monitoring position, the system comprising:

    a cylinder having walls defining an interior ~~and having~~ wherein the cylinder has a shaft within the interior wherein the shaft extends through a first wall of the cylinder and wherein the shaft is movable within the interior of the cylinder and further wherein the cylinder has an aperture in the first wall adjacent to the shaft; and

    a sensor within the interior of the cylinder wherein the sensor extends inward with respect to the interior of the cylinder

wherein the sensor detects an amount of light within the cylinder which is not absorbed by the shaft and further wherein an the  
amount of light detected by the sensor corresponds to a position of the shaft within the interior of the cylinder.

10. (currently amended): The system of Claim 9 wherein the sensor is located within the cylinder on a second wall opposite the aperture.

11. (original): The system of Claim 9 further comprising:  
a fluid within the system.

12. (original): The system of Claim 9 further comprising:  
a head attached to the shaft.

13. (original): The system of Claim 9 further comprising:  
a second shaft within the cylinder wherein the second shaft is movable within the cylinder.

14. (original): The system of Claim 9 further comprising:  
a window within the aperture.

15. (original): The system of Claim 9 further comprising:  
a light source adjacent to the aperture wherein the light source projects the light through the aperture.

16. (original): The system of Claim 9 further comprising:  
a processor connected to the sensor.

17. (original): The system of Claim 9 further comprising:  
a coating on the shaft wherein the coating absorbs light.

18. (currently amended): A method for measuring a position of a shaft within a cylinder having walls defining an interior wherein the cylinder has an interior surface and an exterior surface wherein the cylinder has an aperture within one of the walls and further wherein the cylinder has a shaft head within the interior wherein the shaft head is movable within the interior of the cylinder, the method comprising the steps of:

directing light into the interior of the cylinder through the aperture;

attaching a light sensor to the interior surface of the cylinder wherein the light sensor extends inward with respect to the interior of the cylinder;

detecting an amount of the light in the interior of the cylinder which is not absorbed by the interior surface and the head of the cylinder wherein the light sensor detects the amount of light which enters the cylinder through the aperture; and

determining relating an amount of light detected to the a position of the shaft head in the interior of the cylinder wherein the position of the head corresponds to the amount of light detected by the light sensor.

19. (currently amended): The method of Claim 18 further comprising the step of:

moving the shaft head within the cylinder.

20. (original): The method of Claim 18 further comprising the step of:

placing a fluid within the cylinder.

21. (new): The method of Claim 18 further comprising the step of:  
connecting a magnet to the head of the cylinder wherein the  
magnet is adjacent to the exterior surface of the cylinder.